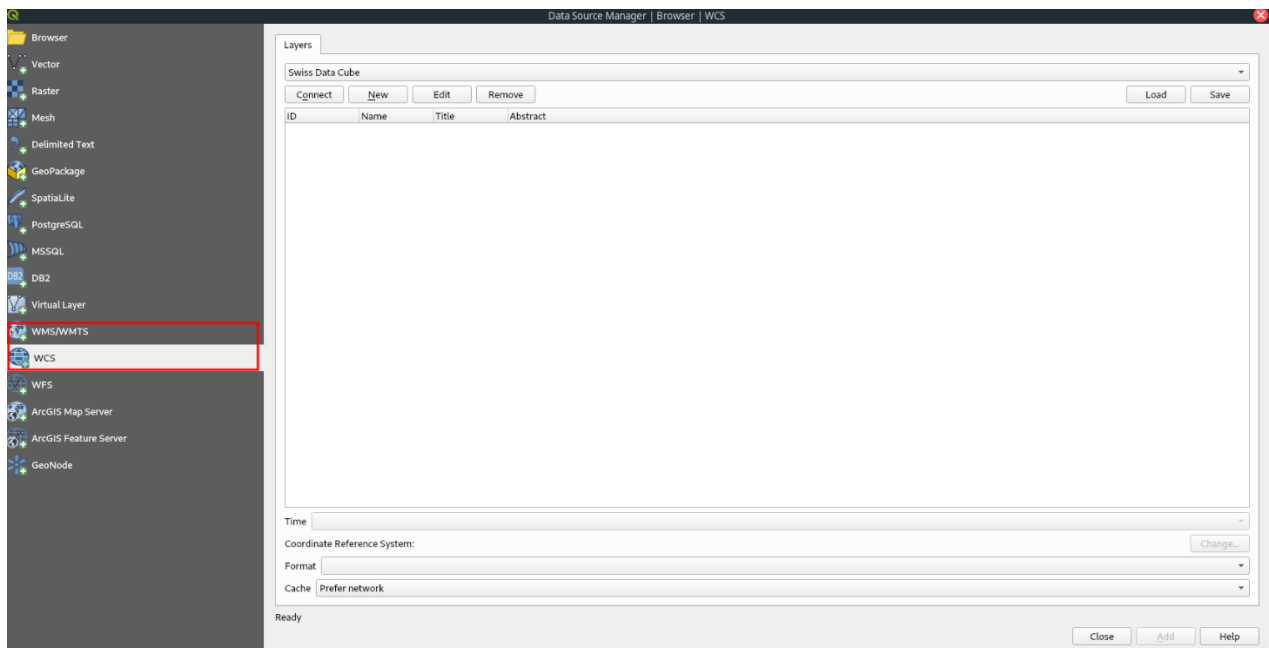# Geoserver user manual

This document describes how to access the Austrian Data Cube (ACube) through WMS/WCS Geoserver with QGIS. To run this application, you will need QGIS version 3.8 or higher and a stable internet connection.

In case you have not installed QGIS or have an older version please visit https://qgis.org/en/site/ to install or update the software. QGIS is a community driven open source and free geographic information system with many of the capabilities of commercial GIS.

After opening QGIS, click on the **Open Data Source Manager** button in QGIS. This button will be commonly found at the upper left corner (red box figure below). This action will prompt a window.
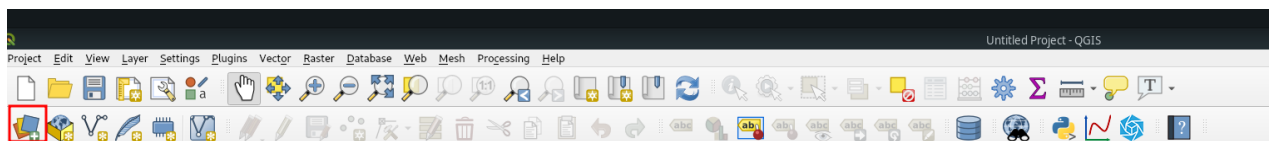

Next, you will need to choose between "**WMS/WMTS**" or "**WCS**", see red box in the image below. WMS will provide a georeferenced image including previews and styles and WCS will display raw data values, more information about this can be found at the ACube wiki (https://austriandatacube.eodc.eu/xwiki/). The following instructions are identical for both services.

Click on the button **New** in the main part of the window to add a New service (see red box figure below).
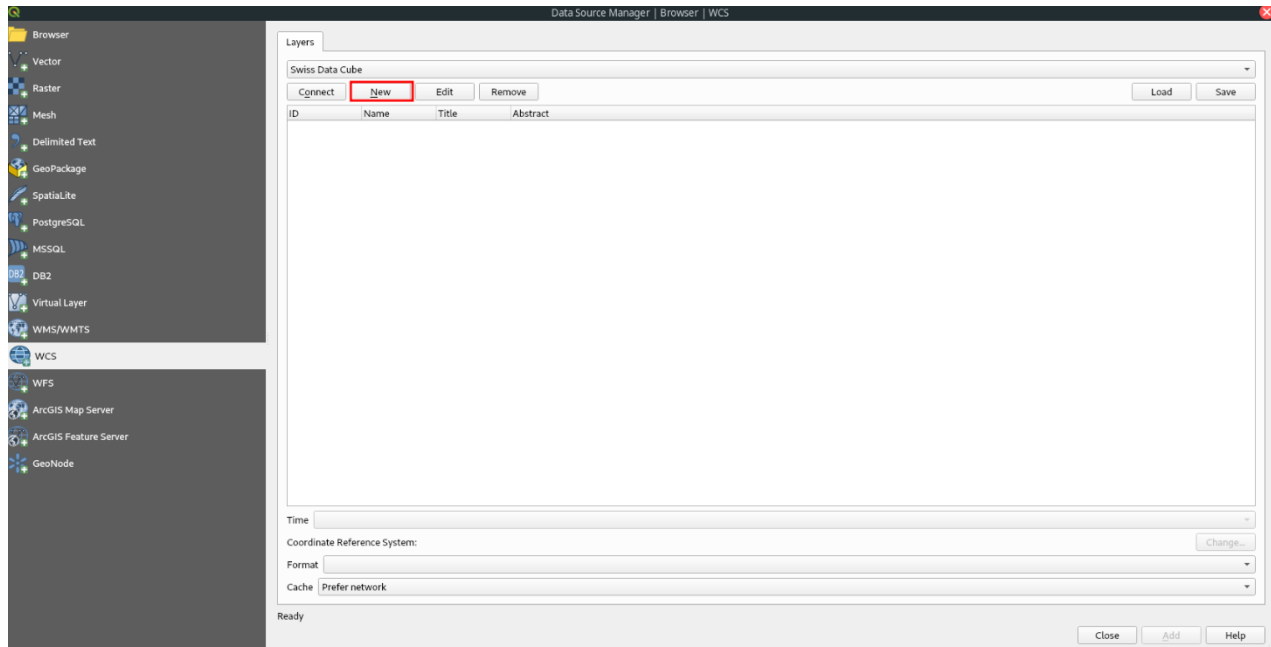
A "Create a New WCS/WMS Connection" window will appear (see figure). Fill out the following information:

- Connection Details:
  - Name: Choose a name for the connection
  - URL: https://geoserver.eodc.eu/geoserver/ows
- Authentication:
  - To setup a new authentication: click on the **+** icon (red box)
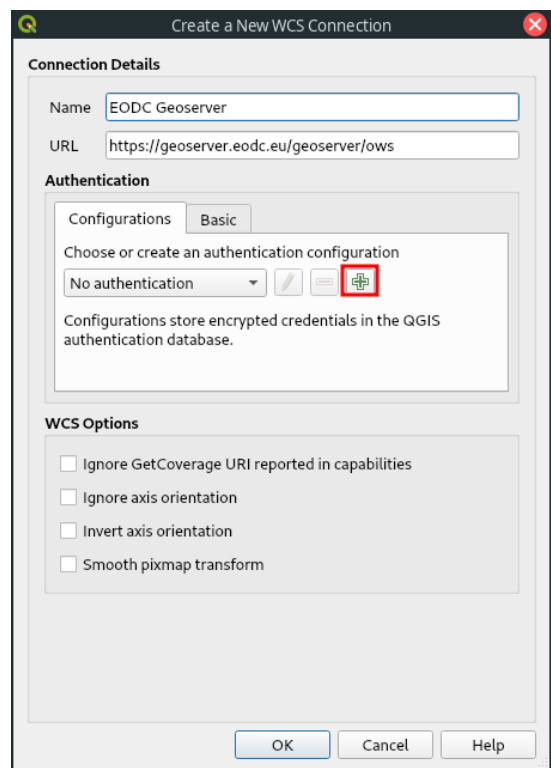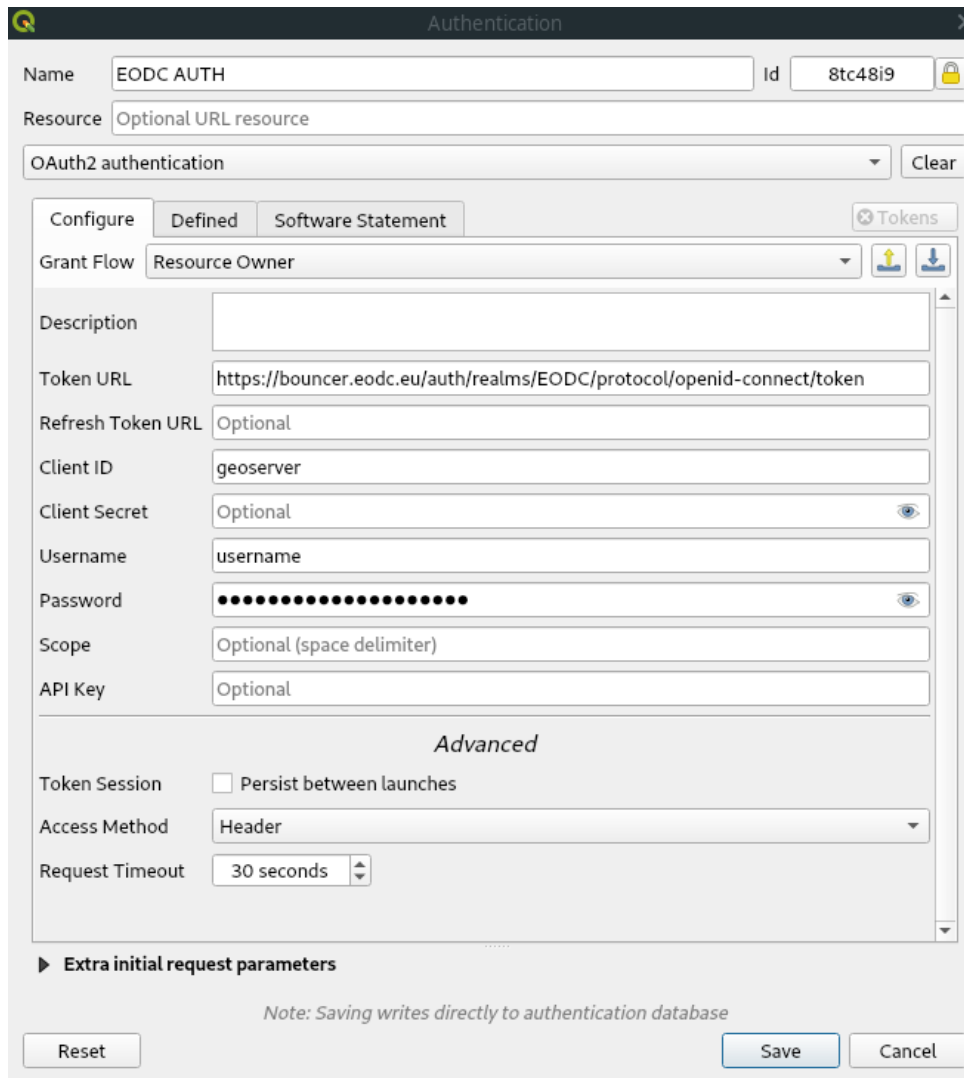
A new **Authentication** window will open. **IMPORTANT: YOU WILL BE PROMPTED FOR A PASSWORD/KEYRING. IN THIS STEP IT IS IMPORTANT TO SECURE YOUR INFORMATION. QGIS WILL SAVE YOUR DATA ON YOUR DISK IN AN ENCRYPTED DATABASE GIVEN THE PROVIDED PASSWORD. REMEMBER THE PASSWORD AFTER SAVING.**

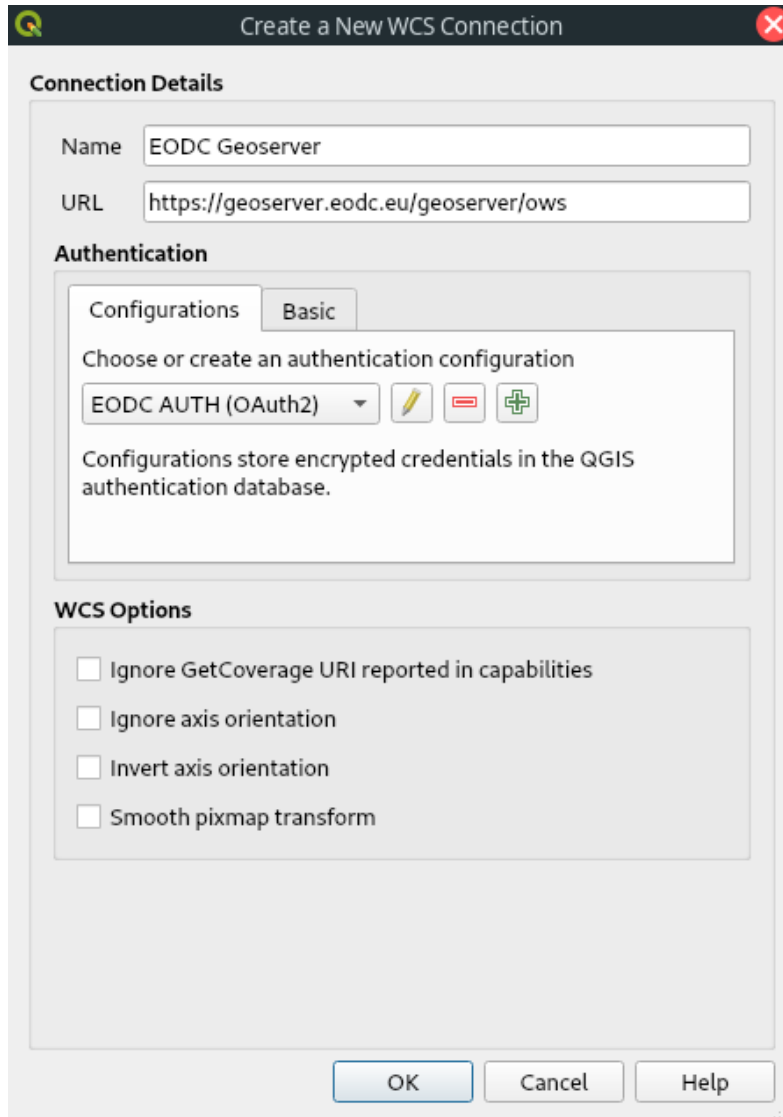The window must be filled with following information (see figure below):

- Name: name for the authentication
- Id: will be generated automatically
- Type of authentication shall be set to **OAuth2 authentication** from the dropdown (this will add new fields to the window)
- Grant Flow: Resource Owner
- Token URL: https://bouncer.eodc.eu/auth/realms/EODC/protocol/openid-connect/token
- Client ID: geoserver
- Username: your EODC username/email
- Password: your EODC password

Click **Save** to store this information and make sure it is selected in the following window. Click **OK** to save the server. You may re-use the stored authentication information for another OWS service. Simply select the name of the service from the dropdown when defining a new EODC Connection.

Click **Connect** to connect to the resource server. A list of available datasets will be shown (see figure below), including ID, Name, Title and Abstract. Select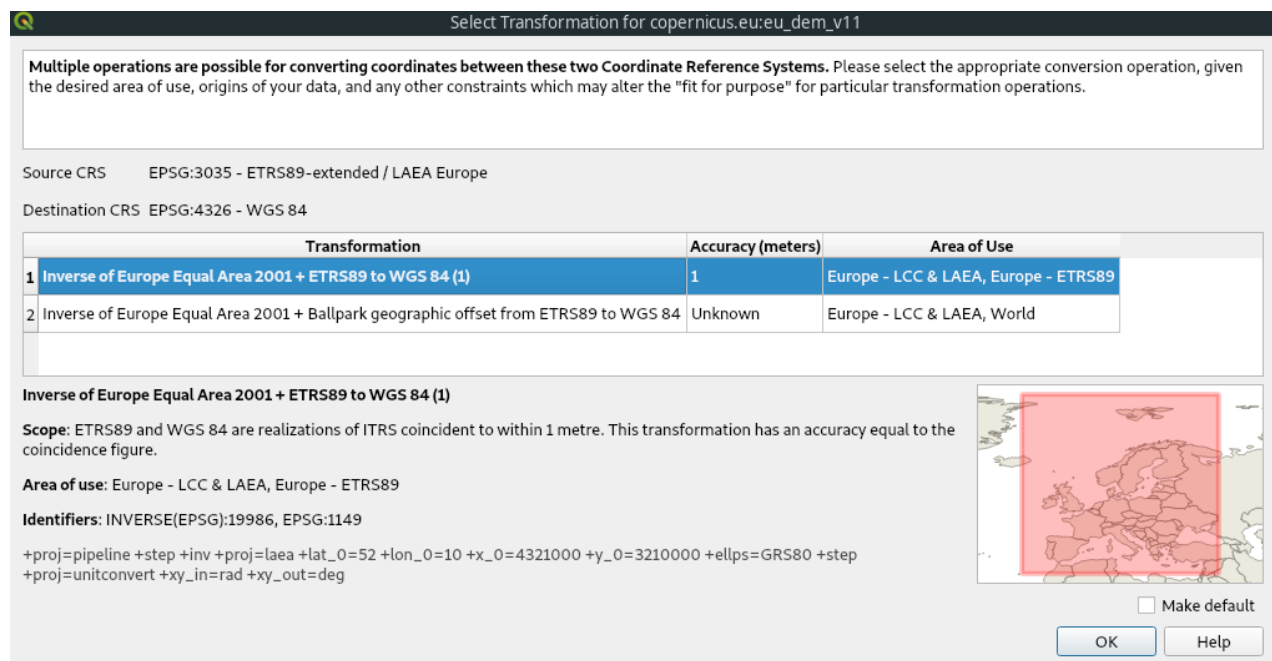 a dataset, configure other inputs such as time, CRS or other information and click **Add** to add the data to QGIS as a layer.
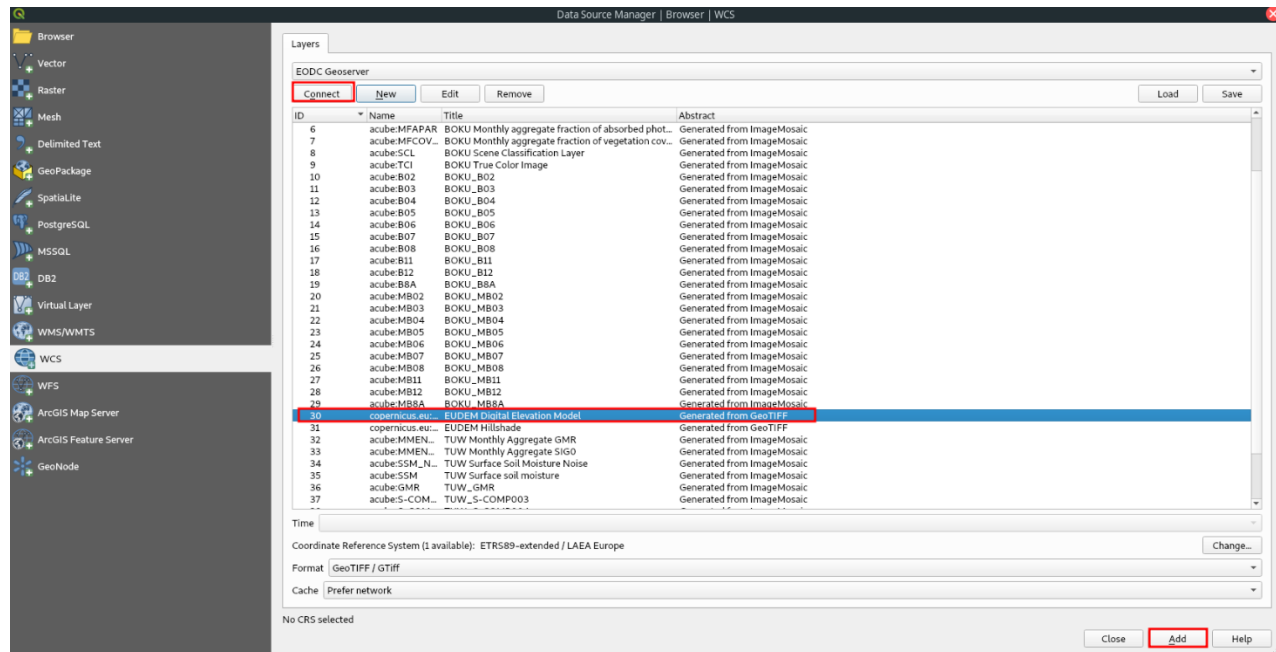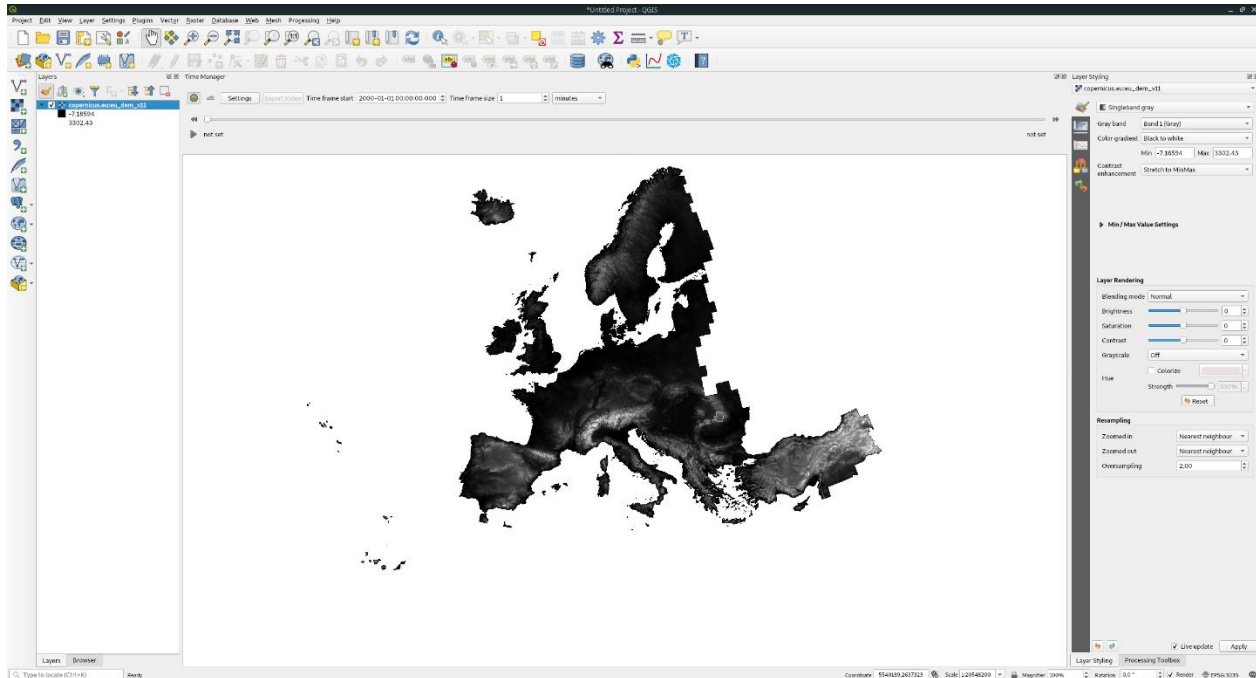

Optional: You may be prompted to select a **transformation**.

The dataset is then loaded (see figure below), and may be manipulated (downloaded, processed into another layer etc.) as a standard QGIS layer.

The previous example shows how to load temporal WCS datasets to work with, further process, download etc. The next example will show how to efficiently visualize datasets using the **Time Manager plugin**. The Time Manager plugin is available in the standard QGIS plugin store. To access the store click: Plugins -> Manage and Install Plugins. Search for TimeManager. Click on Install Plugin
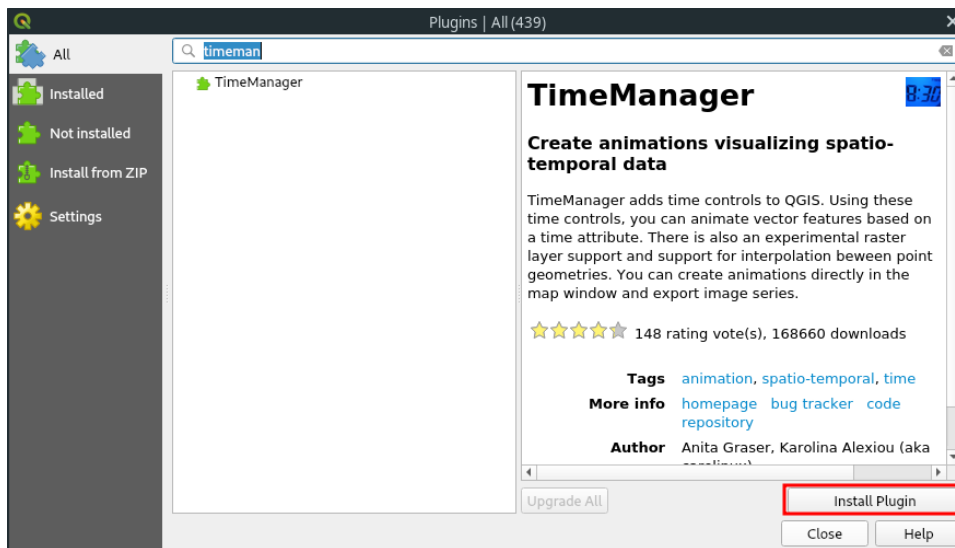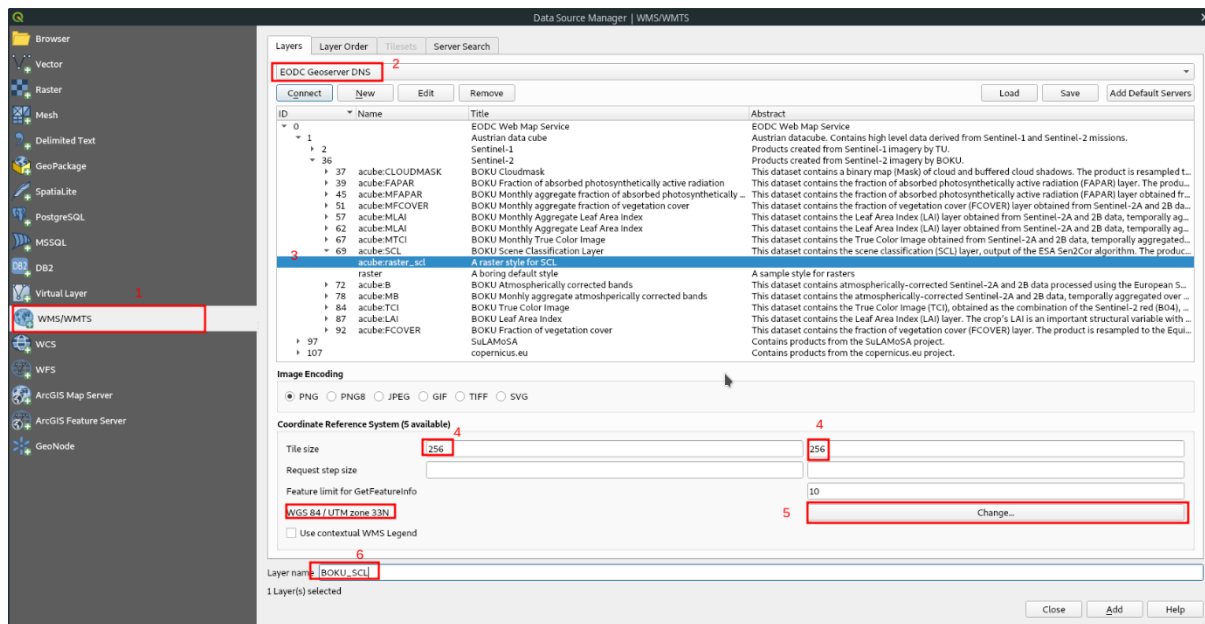

The plugin should install, and it should be immediately added to the screen. It is recommended to restart QGIS after installing new plugins.

To explore WMS with the plugin, first add a WMS dataset.

1. Select WMS dataset in dataset source manager
2. Select the EODC Geoserver
3. Select the desired dataset. **NOTE:** Some datasets have multiple WMS styles associated with them. In this case the scene classification layer has a default raster style and a custom classification style.
4. **Optional**: For faster rendering set these fields to 256x256. This allows faster requests to the server but might cause block artifacts.
5. Select the desired coordinate reference system
6. **Optional**: Give the layer a name

Click Add when you have selected these options and the dataset will load. The layer browser will show the style associated with the layer.
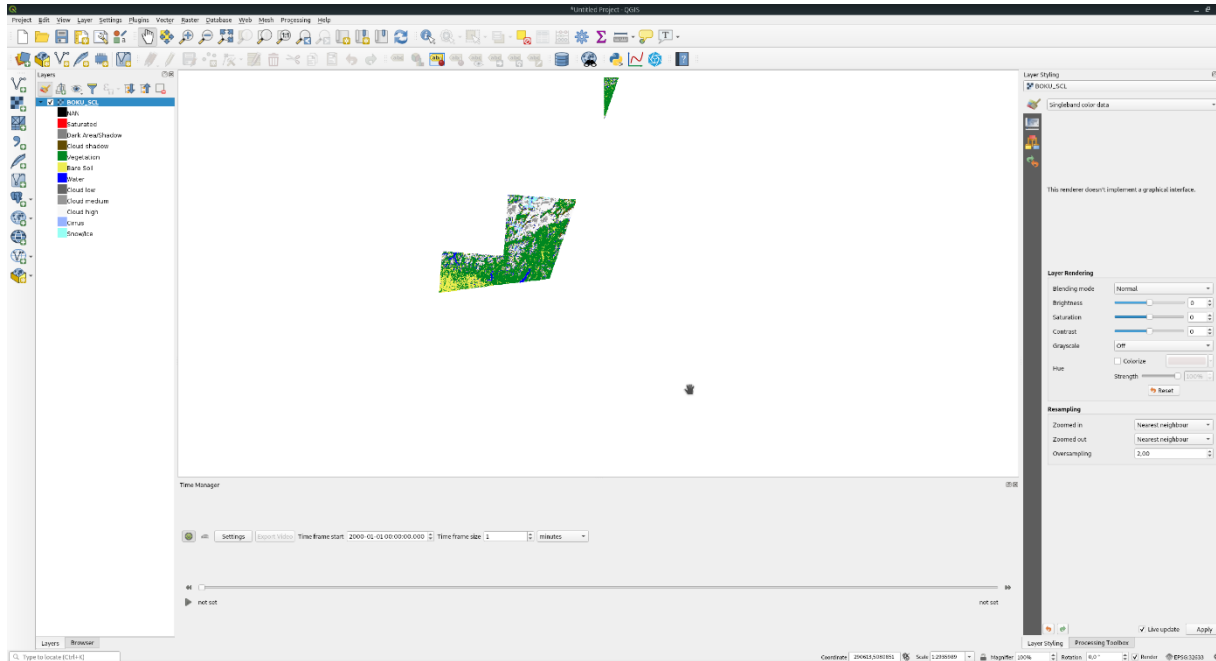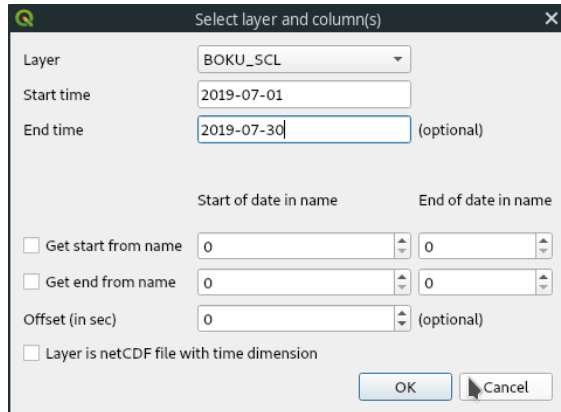
To view the dataset temporally we use the Time Manager plugin shown pinned to the bottom of the QGIS window. Clicking on Settings will reveal further options on how to render the dataset with the plugin.
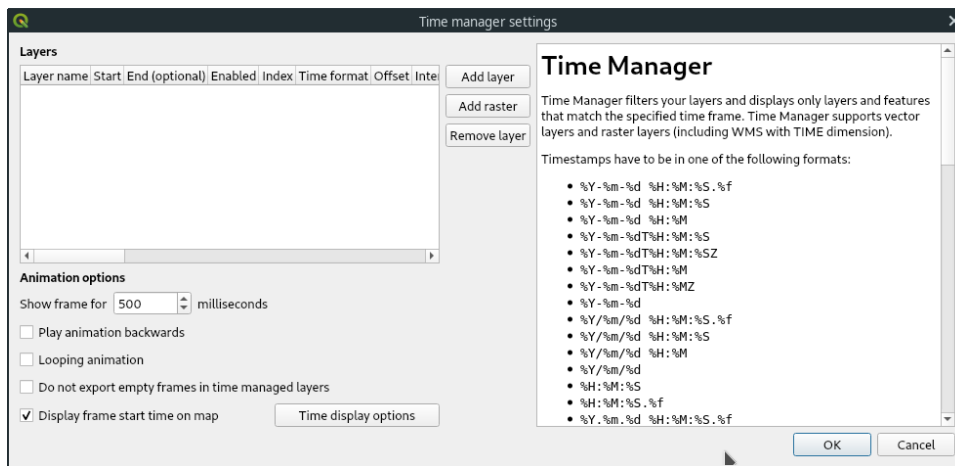
By Clicking on add Raster we can add a raster to be visualized with the plugin. **NOTE:** Specifying both **Start** time and **End** time is recommended (i.e. start: 2017-07-01 end: 2019-07-30). Click on OK and OK in the time manager settings. A timestamp should be shown in the bottom right of the map display window.

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To control the date, we use the following options:

1. Shows the current datetime of the dataset. This option may be controlled manually.
2. Shows the timeframe after the given datetime to show dataset. This may be larger than 24 hours, but it also may show 2 datasets simultaneously. Setting to 23 will show only the data for the given date.
3. Will advance the date on the date timeline by the **TILE FRAME SIZE** (in this case 23 hours). This may be useful for creating animations.